

USSN: 09/973,635

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present invention. The field of invention of a coated optical fiber differs from that of an optical fiber cable that includes a bundle containing a plurality of optical fibers at its core.

New claim 21 has been added to emphasize the small diameter of a coated optical fiber. Additional emphasis provided by this claim does not change the fact that originally submitted claim 1 recites an appropriate limitation to a small diameter optical fiber.

Rejection of Claims under 35 U.S.C. §103

In a general statement the Office Action indicates that:

Claims 1 - 20 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lewis (U.S. patent 4,172,106).

According to MPEP 706.02(j), to establish a *prima facie* case of obviousness, three basic criteria must be met. Each of these criteria is listed below with comments relating to the reference of Lewis.

Requirement

There must be "some suggestion or motivation - - - to one of ordinary skill in the art, to modify the reference - - -."

Comment

The reference of Lewis addresses strengthening for an optical fiber cable that has a core consisting of a bundle of, typically seven, optical fibers. Strengthening for the cable includes a woven textile sleeve, loosely positioned around the fiber bundle, and, over the textile sleeve, a protective sheath in the form of a plastic tube reinforced with tensile material (steel wires) in its wall. It is unlikely that one of ordinary skill in the art would be motivated to investigate strength characteristics of individual optical fibers, as in claim 1 of the present invention, when the reference of Lewis directs attention to support means for an optical fiber cable that are external to the location of the optical fiber bundle.

Requirement

There must be, "a reasonable expectation of success."

Comment

The reference of Lewis does not address dynamic fatigue of individual optical fibers and provides no suggestion or indication of how to develop optical fibers exhibiting highly consistent strength characteristics as shown by the "relative frequency distribution of at least about 85%" in claim 1 of the present invention. Without assistance from the reference it is most unlikely that one of ordinary skill in the art would succeed in developing optical fibers with a

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relative frequency distribution for dynamic fatigue measurements as claimed by the present invention.

Requirement

"- - the prior art reference must teach or suggest all the claims limitations."

Comment

The reference does not limit description to a coated optical fiber and is silent concerning relative frequency distribution of dynamic fatigue measurements for a coated optical fiber. Both are required limitations of the present invention.

Failing to satisfy any of the requirements for a *prima facie* case of obviousness, the reference of Lewis is ineffective as a basis for rejection of the present invention for obviousness.

The Office Action does not address each claim individually but refers to several groups of claims, as follows:

In regard to claims 1 - 2, 12 - 13, Lewis' device discloses a coating fiber comprising a silica cladding (see col. 3 - 5); and a coating applied to the cladding to provide coated optical fiber having a diameter of approximately 150 microns (see col. 3, lines 12 - 66). However, Maurer's device fails to explicitly disclose the measurement the dynamic fatigue and resistivity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the measurement the dynamic fatigue and evaluate the resistivity of the optical fiber, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

While citing columns 3 - 5 of the reference of Lewis as disclosing an optical fiber comprising silica cladding, in fact the cited portion deals primarily with the manufacture of a optical cable as shown in summary at column 3, lines 50 to 57. Only column 3, lines 29 to 41 describes optical fiber structure that corresponds to conventional optical fibers. This section of the cited portion is silent concerning strength characteristics of individual optical fibers as measured by dynamic fatigue.

Incorporating all the teaching of column 3, lines 12 to 66, the combined diameter of the resulting cable is 3.0mm, which is twenty times the diameter of 150 microns for a coated optical fiber according to the present invention.

Although unable to identify the reference of "Maurer," applicants recognize that the reference of Lewis fails to explicitly disclose measurement of dynamic fatigue of individual optical fibers. Whether or not the reference teaches "resistivity" does not apply to the present application, which does not include such a term.

The omission of dynamic fatigue measurement from Lewis means that the reference fails to identify either the desired result, i.e. dynamic fatigue characteristic, or a result-

controlling variable. In re Boesch [617 F. 2d 272, 205 USPQ 215 (CCPA 1980)] in the opening sentence states, "- - where results of optimizing variable, which was known to be result effective, - -." Use of the cited precedent requires the reference to identify a result effective variable before result optimization is possible. The reference of Lewis fails to satisfy this requirement. Without knowledge of the goal, i.e. to optimize optical fiber strength as measured by dynamic fatigue, or a property that may be used for optimization, the artisan could not perform routine experimentation to discover the presently claimed invention. Any attempt to apply In re Boesch first requires identification, in a cited reference, of at least one variable that is known to affect the measured response, or result. Without knowledge of such a variable, how would one of ordinary skill in the art arrive at the highly consistent, ranges of dynamic fatigue required for an improved coated optical fiber, as recited in claim 1 of the present invention?

The rejection of claims 1 - 2, and claims 12 - 13 under 35 U.S.C. § 103(a) as being unpatentable over Lewis (U.S. 4,172,106) has been overcome and should be withdrawn.

The Office Action indicated further rejection of claims under 35 U.S.C. § 103(a) as follows:

In regard to claims 3 - 11 and 13 - 20, Lewis' device discloses the aforementioned limitations, but fails to explicitly disclose different type of material for the optical fiber. It would have been obvious to one having ordinary skill in the art at the time the invention was (made) to use different coating materials since it has been held to be within the general skill of a worker in the art to select known material on basis of its suitability for the intended use as a matter to meet the system design requirement.

Claims 3 to 11 and claims 13 to 20 are dependent claims including limitation to "a relative frequency distribution of at least about 85% for dynamic fatigue measurements between about $49.2 \times 10^3 \text{ kg/cm}^2$ and about $63.3 \times 10^3 \text{ kg/cm}^2$." For the reasons given above, Lewis does not teach this limitation. The Office Action admits that the reference of Lewis does not disclose coating materials for optical fibers. Without knowledge of materials to test, or the reason for testing them, one of ordinary skill in the art would have no basis for routine experimentation to discover the present invention, as claimed.

Claims 3 - 11 each add additional limitations to claim 1. Claim 1 is patentable for the reasons given above. Thus, claims 3 - 11 should likewise be patentable. Similarly claims 13 - 20 each further limit claim 12. Claim 12 is patentable for the reasons given above. Thus, claims 13 - 20 should likewise be patentable.

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In summary, the rejection of claims 1 - 20 under 35 U.S.C. § 103(a) as being unpatentable over Lewis has been overcome and should be withdrawn.

Applicants have made an earnest attempt to respond to each point made by the Examiner. Based on the foregoing reasons, it is submitted that the application is in condition for allowance. Request is respectfully made for reconsideration of the application and allowance of original claims 1 - 20 and new claim 21.

Please charge Deposit Account 13-3723 any amounts due and owing by reason of this response. For further questions, please contact Applicant's agent who may be reached at telephone number (512) 984-5258.

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Respectfully submitted,

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